T.C Smout and Mairi Stewart, *The Firth of Forth: An Environmental History*,

Birlinn, 2012, ISBN 9781780270647, £14.99 Pbk.

In a long and fruitful career, Historiographer Royal T. C. Smout has provided historians of Scotland, the British Isles and Europe with a number of discipline-defining studies, from pioneering economic and social history in his debut *Scottish Trade on the Eve of Union, 1660–1707* (1963) and the classic *History of the Scottish People, 1560-1830* (1969), to his great passion for environmental history realised most recently in his co-authored *History of the Native Woodlands of Scotland, 1500-1920* (2007), as well as a bounty of edited volumes, essays and articles. Alongside an infectiously engaging personal style and sense of humour, the most compelling characteristic which links all these works is the historian's persistence in asking simply, directly 'how?' and 'why?' — followed by 'with what consequences?'. Here, in conjunction with researcher Mairi Stewart (of the University of the Highlands and Islands), Professor Smout (Emeritus, St Andrews) brings us another such ground-breaking, thought-provoking work: an inter-disciplinary study of the evidence over time for the interrelationships between people and the natural biodiversity of one of Scotland's and the British Isles' greatest estuaries, the Firth of Forth.

The present reviewer is the grandson of both a former lighthouse-keeper on the Bass-Rock and a carpenter who prepared templates for the pylons of the Forth Road Bridge, the son of a regular rod-and-line fisherman on both shores of the tidal estuary (who has caught bass and lobster in the last few years), and now himself a regular dog-walker and observer of natural life on the upper northern banks of the Forth (as well as a former student of the lead author). Thus as a study of a region I know well, I found this an absorbing, shocking and inspiring book. As the introduction makes clear, this is not always the tale of gloom readers in an

Formatted: Indent: First line: 0 cm

increasingly environmentally-conscious era might expect. This project's great strength is its commitment to evaluate a wide variety of qualitative and quantitative evidence: from archaeological analysis, charters and early travellers', antiquarians' or naturalists' accounts to modern scientific and conservation management reports; from medieval and early modern maps to 18th- th and ~~19~~th -19th-century company, trade association and estate papers, census data and other allied government audits of industry, commerce and population. These can indeed be merged and compared to paint an appalling if predictable picture of over-exploitation and pollution of fish and shell-fish stocks in the post-Union industrial age. There is also a fine sensitivity throughout this study to the question of the evolving scale of human impact upon the Forth's natural resources, in search of tipping points in time and technology when human demand for food, fuel, tradable commodities and physical space overwhelmed the point of cyclical, natural replenishment or recovery. However, adopting longer-term baselines where possible, this book also seeks to explain the apparent flourishing in the 20th th and 21st st centuries of other species in the Forth, such as colonies of particular sea-birds and seals, often unintended outcomes of human activity which cannot always be immediately explained.

———The volume takes a largely thematic approach, tending (given the weight of evidence) towards a focus on the 'Anthropocene' ~~Industrial~~ industrial age up to the present day. Chapter one, though, briefly surveys the formation of the Forth through Mesolithic, Neolithic, Bronze/Iron age and medieval millennia, a vast stretch which opens c.-7,000 years ago with the sea flooding inland to fill glacial retreat up to ~~twelve~~ 12 miles west of modern Stirling (a topography mistakenly echoed in medieval maps [plate 1] where the Forth/North Sea almost touches the Clyde/Atlantic). Archaeological finds of ancient whale and breeding sea-bird bones and shell-fish middens, well above modern tidal reaches on land long since given over to bog and peat, point to a small pre-historic population hunting and gathering on shore, sea

and isle. As dedicated farming and fishing communities were established in the medieval and early modern eras, the gathering of sea-weed, 'wrack and wair', to fertilise fields would sustain such valuable coastal links through to the Victorian import of guano, leaving the present-day dilemma of plastic-ridden rotting weed on tourist beaches (which does, though, prevent erosion).

Chapter two traces the development of commercial fisheries in the Forth, sifting the paucity of record evidence and with a focus upon the emergence by the 16th century of an extensive regional and European industry along coastal Fife (with over 100 boats manned by c. 1,000 fishermen by 1700) and from Leith/Newhaven to Eyemouth on the southern shore. These boats sailed far afield to seasonal grounds as well as exploiting local waters, with an export peak of almost 50% per cent of all the herring sold to the Baltic by the 1700s. But despite the importance of their contribution to Scotland's national wealth these fishing communities were self-policing: extant fishing regulations of 1627 for Fife west of Leven make for illuminating reading, prohibiting Sabbath fishing, night or pre-dawn catches or malicious competition. Yet the latter certainly occurred in what were rich, profitable and increasingly crowded waters with Scottish boats vying for ground their communities claimed to have worked from 'time immemorial' against titled landowners, their agents and foreign boats: this was all the more so the case after c.-1730 as the herring and stocks of haddock, cod and other white fish became erratic.

While the 18th century thus saw the fisheries decay, chapter three also charts the sad fate of the Forth's 50 square miles of oyster beds. By the Union of 1707 demand for up to 30 million oysters a year taken by small in-shore boats had already overwhelmed attempts to avoid the longer-term exhaustion of the 'scalps' by imposing a close season and protecting the monopoly of the local Society of Free Fishermen of Newhaven against Dutch and English vessels (which sought to take young oysters to replenish their own beds). The economic

Formatted: Indent: First line: 0 cm

opportunity of demand from Victorian London from the 1830s made matters worse (as did the railways from the 1840s) with violence and litigation recurrent between Newhaven fishers and both the owners of neighbouring beds and the English merchant to whom Edinburgh City Council briefly leased its scalps in 1839 (as revealed by Admiralty court records). Thereafter, the introduction of the heavier steam dredge and sheer greed – which saw oyster gauges to preserve the young ignored – left the scalps bare by the 1870s, a stark contrast to France and the Netherlands where early state intervention saw beds successfully managed and farmed.

———A similar combination of demand and larger boats with more/finer trawl nets (instead of lines) also sealed the fate over time of the Forth's booming herring fishery of the 17th~~th~~ and 18th~~th~~ centuries (chapters four and five). By the 1870s the unique commerce and culture of the 'Lamas Drave' at the mouth of the Forth was no longer viable: its seasonal counterpart, the 'Winter Herrin'', tailed off to nought, too, between the World Wars. In both cases, the reluctance of the authorities to legislate is remarkable. The Scottish Fisheries Board/Commission did seek the best scientific evidence of the day (beginning in the 1880s with work by the Gatty Marine Laboratory of St Andrews University), and was satisfied that there was no cause-~~and~~ and-effect between intensive trawling and disruption to the spawning of massive herring shoals, ignoring complaints by smaller-boat and line fishermen. The public debate continued beyond the 1890s by which time steam and then diesel engines multiplied the trawl damage caused previously under sail. This, though, was a failure of intervention echoed in the muddled European Common Fisheries Policies of the present day.

———Chapter six briefly surveys the history of fresh-water sprat, salmon and trout fishing with small boats, nets and traps in the Forth's upper reaches (west of Queensferry). Here the picture of decline is repeated but ~~one where~~here the causes have less to do with over-exploitation than with agricultural and later industrial pollution obscured by scientific ignorance. A failure to distinguish between sprats and young herring as separate species is

perhaps understandable before the later 20th century. However, the blind folly of Victorian land drainage of the Carse around Stirling sent tonnes of (valuable) peat down the river to silt up small economy harbours, sandy beaches and fish traps. Metal and ~~Oil~~ oil works around Falkirk and Grangemouth, and the upheaval of the great naval base at Rosyth (just look at the 'before' photograph of that tranquil bay in 1909, page 6), would also ruin the 'sparling' fisheries of the mid-Forth by the 1960s~~/~~ and 1970s. Nevertheless, here the fight against pollution of the last two generations – together with habitat conservation and restoration - has aided species recovery.

A focussed survey of modern industrial pollution (chapter seven) makes alarming reading, charting the unregulated tainting of the Forth's many tributaries with deadly effluent from construction, mining, paper mills, dye works and oil refining to meet the demand of booming Victorian cities, towns and their hinterlands. The cumulative effect of these works was to reduce water levels and starve even flowing water of oxygen, eradicating plant life, insects and fish. Again, attempts at oversight and legislation were hindered by contemporary laissez-faire and limited science. An Inspector of Rivers (1876) and a Scottish Advisory Commission for River Pollution (1922) showed an understanding of cause and effect but legislation proved slow to introduce. Indeed, it is has only been with a sector shift to tourism, services and leisure and a commitment from the 1970s to tackle environmental contamination that these processes have been slowed and in some instances reversed (if not everywhere, as anyone walking at Crombie Point above the Forth Rail and Road bridges and Rosyth will know). But not all species have benefitted from environmental awareness, with the Forth's population of eider duck proving unsustainable without the raw sewage effluent pumped into the estuary, just as land-fill regulations have now driven away gulls.

Formatted: Indent: First line: 0 cm

Next, Mairi Stewart contributes an intriguing chapter on land claim from the sea. In the regions of its winding boggy Carse and wider inter-tidal zones, the Forth has seen a

considerable amount of reclamation if markedly less than on other busy estuaries in the British Isles. It is in this chapter that the strongest sense of the medieval era is conveyed as monastic estates were among the pioneers of 'warping' and infill to reclaim land for agricultural use, a practice continued right up until the 19th century with infill using industrial ash. But is has been the 20th century which has seen the largest scale of land claim on wider estuarial shores to accommodate power stations and other industrial (and, at present day Granton, urban) expansions. While this has radically altered the coastal landscape it has also recently been tempered with a 'managed retreat' and 'renaturing' of reclaimed lands, engineering the reinundation of the upper Forth to restore salt-marsh and thus wading bird, insect and river flora habitat.

A similar theme dominates the final three chapters of the book which survey the history of sea-bird and seal colonies on the islands and shores of the Forth. The decline of recreational shooting and man's bird predation from the late 19th century (aided by a Seabirds Preservation Act of 1869), the withdrawal of sheep, rabbit culls and the automation of the lighthouse, has all helped the unique gannet population of the Bass rock – a mere 7 acres of clifftops off North Berwick – to grow by 3% per cent per annum to reach a peak of 55,500 breeding pairs in 2009. A similar combination of factors has seen auk, guillemot and puffin populations multiply on the isle of May and other islands and cliffs. However, now observed but undisturbed by man, these colonies have begun to decline appreciably in the last few years, the cause most likely global warming's effects on plankton and sand eel growth limiting the birds' food supply. In 2007, it is reported, two-thirds of guillemot chicks perished in their nests for lack of food; just this March, it might be added, late winter storms starved ~~thousands~~ 1000s of puffins up and down the Forth. Grey and Harbour seals have arguably proved far more resilient, re-establishing colonies in the Forth from the 1970s. The book closes its thematic coverage by applying science to debunk the fisherman's myth that seals

deplete fish-stocks. Indeed, the sentimental public reaction to the culling of seals has undoubtedly been the most prominent spur to a species' conservation *ahead* of the hard science of the last generation which has justified it.

The volume closes with a survey of issues of most immediate concern to 'environmentalist' readers and policy makers: the dangers which remain to these recovering species (and humans) from accidents in the industries which have asserted themselves on the Forth's shores at this end of our 'Anthropocene', oil and power generation; with a nod forward, too, to what further environmental changes new sustainable energy might bring, chiefly via wind and wave power. Here, the reader is perhaps rightly left wanting more by way of current data and future policy (not least, an answer to the bizarre Edinburgh rumour about the depot tanker moored at Hound Point, South Queenferry, which was never a renamed *Exxon Valdez*).

This then is a fascinating study with a broad, judicious sweep and tone. As a medievalist myself, I could perhaps have wished to read and see more of the nature and scale of environmental management and change before c.–1600, particularly in terms of land ownership, the nature of agricultural practices on the shores of the Forth (the distribution, say, of arable and pastoral), (de)forestation, transport infrastructure (roads, bridges, ferries, 'lost' harbours, fords) and early industry (particularly following the growth of Edinburgh after the loss of Berwick-upon-Tweed in war), as well as more on the impact of patterns of medieval and early modern climate change. A further case-study of a single medieval community along the Forth might have illustrated some of these linkages and the development of some of the larger regional market towns like Haddington, Linlithgow or Kirkcaldy. Admittedly, the rich footnotes direct readers to further secondary studies (several of them by T. C. Smout) which develop these themes~~, as does P.G.B McNeill and H.L. MacQueen eds. *The Atlas of Scottish History to 1707* (1996).~~ .(1) But some of these relative

gaps might also be addressed by a future Birlinn edition with even fuller illustration. This last point is by no means by way of criticism: the colour plates and black-and-white images included here are rewarding choices (even if the computerised maps are a little bald), but rather that like a number of recent histories – for example, Geoffrey Parker and Colin Martin's *The Spanish Armada* or Dava Sobel's *Longitude* ~~–~~ – the importance and detail of the inter-disciplinary text is deserving of even more images, maps and graphs, particularly of a comparative nature across time drawn from the wealth of cartographic, print and photographic evidence in Scottish collections.

So this in no way detracts from a volume which is sure to be a source of inspiration to many scholars and students. In this regard it is very tempting to ask the authors about key topics, archive sources and collections they feel still remain to be fully explored. Professor Smout writes persuasively of the importance of published studies of European and American rivers: but which Scottish or British Isles' estuaries or river systems does he feel require a similar inter-disciplinary study, perhaps for contrast with the Forth? In addition, one of the recurrent motifs of this book is that in the early days of attempts at regulation and conservation – especially in Victorian dealings with fish stocks – the methodologies and conclusions of the marine science of the day were mistaken or simply did not provide an understanding of the connections of climate, currents, food chain, species' biology and human activity. Much more is now known in our digital age although some key questions remain unanswered – nevertheless, do the authors envisage that future science may yet challenge and reassess our current (environmental historian's) understanding of certain species' fate, both now and in the past? More generally how might an environmental history of the Forth (and Scotland) look ~~fifty~~ 50 years from now? Finally, it is perhaps too broad a field to ask how would the authors prefer that future studies of the Forth region of a discrete political, social, economic or cultural nature~~,~~ integrate the results of their environmental study: but for the public at

large, how at least might these important findings and patterns over time alter new heritage presentations of the built and natural environment?

1 *The Atlas of Scottish History to 1707*, ed. P. G. B. McNeill and H. L. MacQueen (Edinburgh, 1996).